



Improving the scope of indicators for monitoring developments in vocational education and training in Europe

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Abstract

Along the lines of an explicit objective of the Copenhagen process to improving the scope, comparability and reliability of statistics on vocational education and training, in this publication some issues related to the use of indicators for monitoring the developments in vocational education and training in the European countries are discussed. In the publication some aggregate measures are constructed based on data provided by Eurostat from the joint data collection on education (UOE), the Continuing Vocational Training Survey (CVTS) and the EU Labour Force Survey (LFS). These aggregate measures can be further use to monitoring the developments in vocational education and training across the European countries.

The first section describes the European political context in the field of vocational education and training while the second section looks at the main monitoring issues. Indicators on participation in vocational education and training (both initial and continuing) are presented and analysed in the third section where an index of vocational training is constructed and analysed. The links between vocational training and participation in lifelong learning across European countries are also presented. Financing issues are discussed in the fourth section whereas some outcomes for VET are presented in the fifth section. An overview of the concrete outcomes of the European cooperation in vocational education and training is presented in the annex.

1. Policies for vocational education and training in the European Union

The major importance of VET for individuals, enterprises and society is widely acknowledged, and is perceived as a key element of lifelong learning. Vocational Education and Training (VET) plays a key role in this picture, providing the skills, knowledge and competences needed in the labour market. It is therefore an essential part of the EU's 'Education and Training 2010' work programme and the Commission acts together with Member States to strengthen the provision of VET across Europe.

The basis for European co-operation in VET was laid out in the *Copenhagen Declaration* which was endorsed in November 2002 by the education Ministers of 31 European countries, social partners and the European Commission.¹ The Copenhagen Declaration was the starting point of the Copenhagen Process. A central part of the process is the development of common European frameworks and tools to enhance the transparency, recognition and quality of competences and qualifications, making the mobility of learners and workers easier. An overview of the concrete outcomes of the European cooperation in vocational education and training is presented in the annex. The most important of these tools are the European Qualifications Framework (EQF), Europass, the European Credit System for VET (ECVET) and the Common Quality Assurance Reference Framework for VET (CQARF).

The Copenhagen process was developed within the perspective of lifelong learning, and aims to encourage individuals to make use of the wide range of vocational learning opportunities available, for example at school, in higher education, at the workplace, or through private courses. The lifelong learning tools should enable users to link and build on learning acquired at various times, and in both formal and non-formal contexts. There is a review of the process every two years, the first of which took place in Maastricht in December 2004 and the second in Helsinki in December 2006. The next review should take place in Bordeaux at the end of 2008.

The Copenhagen process for enhanced co-operation in vocational education and training (VET) suggests that reform and investment should focus on improving its image and attractiveness, increasing participation, and improving its quality and flexibility. The 2008 Joint progress report of the Council and the Commission confirmed that reforms in education and training are moving forward in many areas, but more substantial efforts are required especially in the development of national lifelong learning strategies. The report indicates four major transversal policy objectives covered which are of relevance to vocational education and training:

¹ Council Resolution on the *Promotion of Enhanced European Cooperation in Vocational Education and Training*, Brussels, October 2002

- elaboration of national qualifications frameworks or systems,
- implementing measures to assess and validate non-formal and informal learning,
- establishment of lifelong guidance systems and
- initiatives to strengthen trans-national mobility.

Combined, these measures promote flexible learning pathways, enabling individuals to transfer their learning outcomes from one learning context to another and from one country to another.²

The education and training landscape in the European Union has evolved in past decades and the distinctions between educational pathways of general-higher-vocational training have become blurred as a result of changing social, economic and political priorities. Although secondary and tertiary education are reflecting the growing need to enhance human capital by raising levels of skills among the population, VET sometimes suffers from being poorly integrated within the education system. As recommended in the 2008 Joint Interim Report, further work must be done to improve the quality and attractiveness of VET and progress must be made in reducing obstacles to progression between VET and further or higher education. Peer-learning activities and the use of research results will make an important contribution in this respect.

² [*Delivering lifelong learning for knowledge, creativity and innovation*](#), Joint progress report of the Council and the Commission on the implementation of the 'Education and Training 2010' work programme, Brussels, January 2008

2. Monitoring progress in vocational education and training in Europe

The Helsinki Communiqué³ on the future priorities of enhanced European cooperation in vocational education and training states that *adequate and consistent data and indicators are the key to understanding what is happening in VET, to strengthening mutual learning, to supporting research and to laying the foundations for evidence-based training policy*. Following a clear demand for indicator-based policy monitoring, the Council in May 2007 has identified a framework of sixteen core indicators for monitoring progress towards the Lisbon objectives and has invited the Commission to make full use of those indicators which can largely be based on existing data and whose definition is already broadly established.⁴ Moreover, the 2008 joint progress report has called for further development of indicators and benchmarks in line with the Council conclusions of May 2007. In the coherent framework of indicators adopted by the Education Council in May 2007 there is no direct reference to indicators for monitoring the developments in VET. To a certain extent vocational education and training is covered by some of the sixteen proposed indicators, for instance by participation of adults in lifelong learning, the upper secondary completion rates of young people or by early school leavers. For other indicators which could be used as proxy measures for developments in VET (such as adult skills) data will become available in the new surveys which will be launched.

Adult participation in education and training measured by the EU benchmark has made slow but continuous progress in the past years. Provisional results for 2007 shows that an average of 9.7% of 25-64 year olds participated in lifelong learning at the EU level but there are sizeable differences in participation between the member states. Only 7 member states exceeded the benchmark in 2007 and this is still some way short of the benchmark of 12.5% for 2010. The best European performers are Nordic countries; they achieved systematically higher and increasing participation rates from 2000 onwards, reaching 20-30% in 2007. Netherlands, Austria and Slovenia are good performers as well. Data for 2007 put Belgium, Germany, Estonia, Ireland, France, Cyprus, Latvia and Luxembourg in the next group, with participation rates around 7-8% whereas Czech Republic, Lithuania, Malta, and Poland, are at 5-6% participation rate in 2007.⁵

To a certain extent the slow progress in the participation of adults in lifelong learning is confirmed as well by the provisional results of the third Continuing Vocational Training survey (CVTS 3).

³ Helsinki Communiqué on *Enhanced European Cooperation in Vocational Education and Training*, December 2006

⁴ Council conclusions on a coherent framework of indicators and benchmarks for monitoring progress towards the Lisbon objectives in education and training, Brussels, May 2007

⁵ European Commission, *Progress towards the Common Objectives in Education and Training. Indicators and Benchmarks*, Commission Staff Working Document, Brussels, July 2008

Participation in continuing vocational training (measured by the number of participants in CVT courses as percentage of employees) has decreased in 2005 compared to 1999 in nine countries for which data exists (Belgium, Denmark, Germany, Greece, the Netherlands, Finland, Sweden, United Kingdom and Norway). There are also different patterns of participation among the member states; an increased proportion of the employees participate in CVT courses in most of the new member states which are now catching up in participation with old member states.

Progress in the completion of upper secondary education was also slow in 2007. With an average of 78% for the member states, the EU benchmark (at least 85% completion rate for youths aged 20-24 years) is still far from being reached by 2010. The upper secondary completion rate is higher in the new member states with Czech Republic, Lithuania, Poland, Slovenia and Slovakia showing over 90% completion rates. The completion rates in Germany and Spain are falling further behind compared to other member states whereas Malta has a lowest of 55% for this indicator. The indicator is particular relevant for monitoring the participation patterns in vocational education and training as over 60% of the European students are enrolled in vocational programmes at the upper secondary level of education (ISCED 3).⁶

The early school leaving rate⁷ has followed the decreasing trend over the past years with a lowest of 14.8% in 2007. Still the EU benchmark (at most 10% rate by 2010) is not likely to be achieved. The indicator, which can be a good proxy for drop-out, shows positive developments in several new member states (Czech Republic, Lithuania, Poland, Slovenia and Slovakia) and Finland where the rates were below 10% in 2007. In order to provide a better picture on education and youths' work status one option is to compare the participation in formal education and the activity rates. In countries where the difference between the two rates is sizeable and negative there is a high incidence of people neither in education nor in employment. The high non-student inactivity rates (which complement the information on early school leaving) should represent a matter of concern in countries where they go hand-in-hand with high early school leaving rates and high youth unemployment rates.⁸ This indicator can also provide useful information on the effectiveness of transition frameworks and thus help policy makers to evaluate transition policies. It could as well complement the information on vocational training; the apprenticeship and dual-type systems, traditionally found in some of the countries with low rates of NEET and ESL (Denmark, Austria, the Netherlands) have proven successful in giving young people a good start in the labour market and this helps explain why these countries enjoy relatively high activity rates for youth graduates of vocational programmes.

⁶ Ibid.

⁷ Percentage of the population aged 18-24 with at most lower secondary education and not in further education or training

⁸ European Commission, *Progress towards the Common Objectives in Education and Training. Indicators and Benchmarks*, Commission Staff Working Document, SEC(2007) 1284, Brussels, October 2007. It should be mentioned that in some countries with high non-student inactivity rates this may be generated by choices (e.g. travel, leisure), or by non-economic constraints (e.g. military conscription)

3. Participation patterns in vocational education and training in Europe

In the past years changing labour market and economic conditions have resulted in a clear demand for more and better quality of VET in most European countries. In 2005 at the EU level, the proportion of students who were enrolled in vocational programmes at the upper secondary level of education (ISCED level 3) increased to 60.5% (up from 55% in 2000/2001); this increase represent more than one million VET students than in 2000. This proportion remained constant in the EU countries over the past years.⁹ Countries like Italy, Malta, Spain, Finland and Sweden witnessed a considerable increase and in Portugal the share of pupils in vocational programmes increased to one third of the students although from a very low level. The share of students in pre-vocational and vocational programmes at ISCED 2 level is low or non-existing in most member states with the exception of Belgium and the Netherlands where more than one in four students is enrolled in vocational programmes. Vocational programmes are predominant at ISCED level 4 where over 90% of the students in Europe follow vocational programmes.

In some new member states, however, the share of VET students has been decreasing and the trend has been towards increased enrolments in general and academic education at the upper secondary level. Poland for example decreased its share with almost 30% and Lithuania with more than 20% between 2000 and 2006; in Hungary the proportion increased in the period, but from a relatively low share in 2000. The demographic changes will have a continuing impact on education and training systems in the European countries. In many EU countries there will be fewer youths in compulsory schooling over the next decade whereas in others, earlier demographic downturns will affect demand for later stages of education and the numbers entering the labour market. The population projections indicates that between 2005 and 2015 in some European countries the population aged 15-to-19 (which could be consider as a typical age group for initial VET) will fall by 30%, cutting demand for upper secondary education. Hence the next few years will offer a window of opportunity in countries where reduced cohort ease the demand for school places and allow access and quality issues to be addressed more easily.

Among the member states the proportion of students who were enrolled in vocational programmes at the upper secondary level of education (ISCED level 3) ranged from some 13% in Cyprus to nearly 80% in the Czech Republic. High proportions of students (over two thirds or close) following a vocational programme at the upper secondary level of education are also registered in Benelux countries, Slovakia, Slovenia, Finland, or United Kingdom (*see Annex Table 1*). Pre-vocational or

⁹ In 2006 at the EU level the proportion dropped by almost 9 percentage points compared to 2005. This decrease is mainly due to a break in series for UK data (41.7% in 2006, down from 72.2% in 2005)

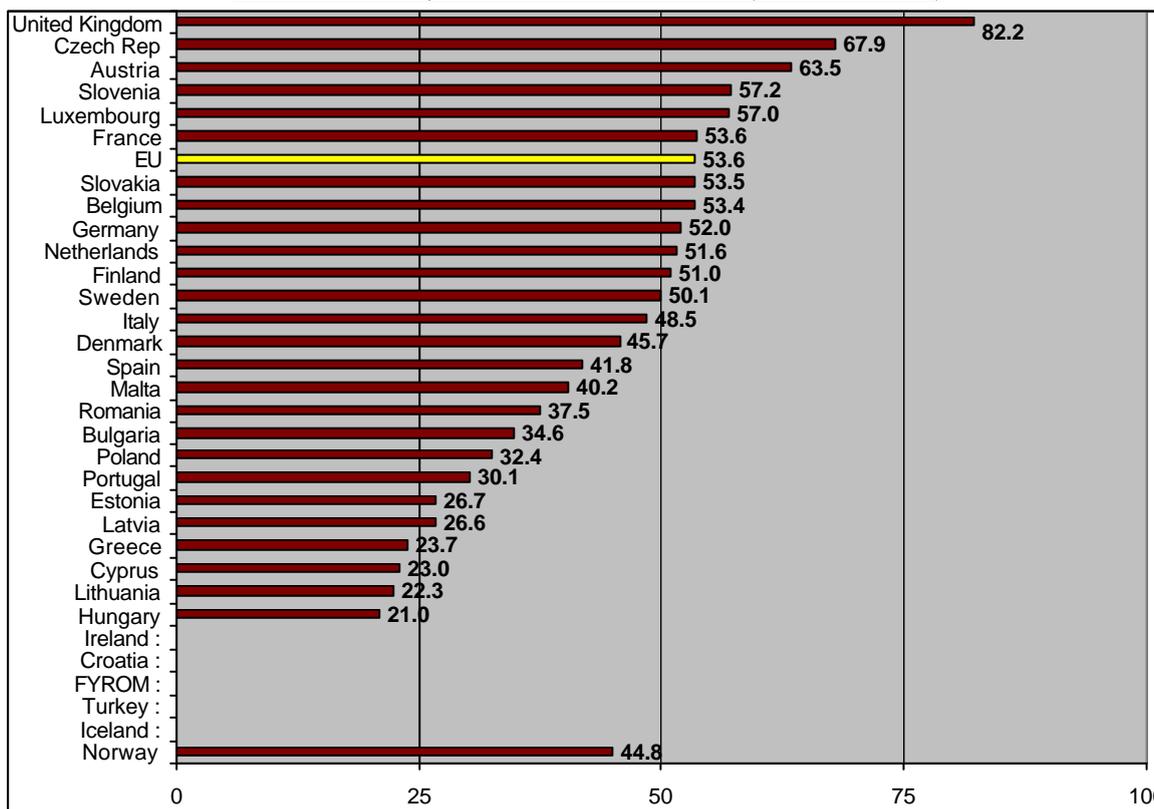
vocational programmes are predominant as well at ISCED level 2 in countries like Belgium or the Netherlands, where more than one third of full-time equivalent students are enrolled in vocational schools. Vocational programmes are predominant at ISCED level 4 with over 90% of the full-time equivalent students following a vocational programme.

It is rather difficult to develop a precise measurement of participation in vocational training using simple statistics. To better capture the participation patterns in vocational education and training, an index was developed and is presented in Chart 1. The index provides a global picture of the very different participation patterns in initial and continuing VET in European countries; it is computed based on three indicators: students enrolled in vocational programmes at the upper secondary (ISCED 3) level of school education (IVTS), participants in initial vocational training in enterprises (IVTE) and participants in continuing vocational training in enterprises (CVTE).

Chart 1: Participation in vocational training in European countries (2005)

An index of participation in vocational education and training

Source: CRELL computations based on Eurostat data (see Annex Table 1)



(:) Missing or not available. Country notes are available on the Eurostat website: http://epp.eurostat.ec.europa.eu/pls/portal/url/page/SHARED/PER_POPSOE

The index measures participation in vocational education and training. It is computed based on three indicators: IVTS, IVTE and CVTE (see Annex Table 1 for details on each indicator). The three indicators are subsequently scaled using the distance to the best performer approach in which all countries with valid data are considered (27 countries). The index score is computed as the arithmetic average of the three normalized indicators. This normalization approach is appropriate as there are no outliers in the dataset. No imputations are made; countries with missing data are excluded from the calculations.

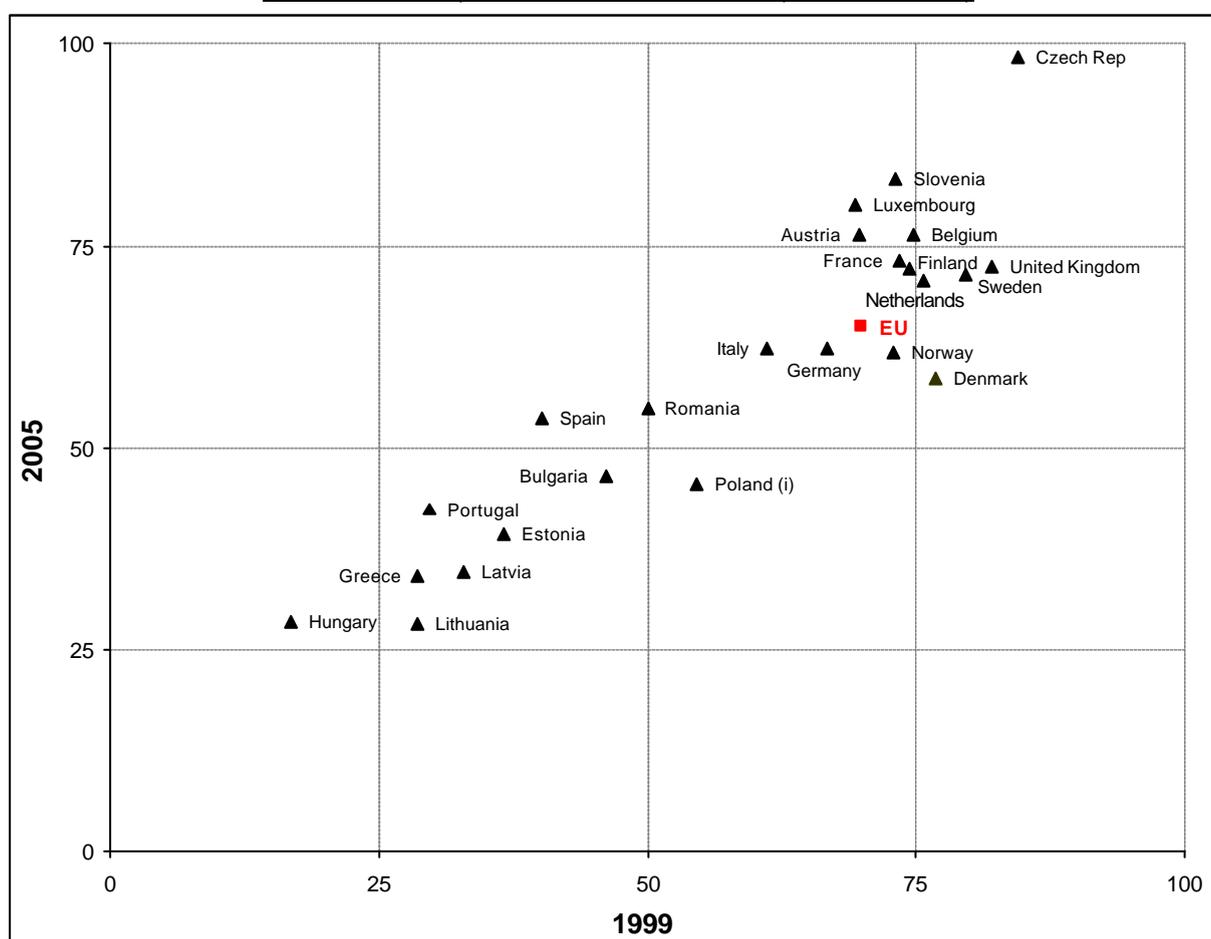
The index shows that three countries (United Kingdom, Czech Republic and Austria) have exceptionally high overall participation in vocational training. For another group of three countries (Slovenia, Luxembourg and France) participation is above the European average and in twelve member states the index score is above 50%; on current trends, some of these countries will catch up on the best performing countries in the near future. Slovenia is one of the fastest advancing member states where participation in continuing vocational training has increased by more than 50% between 1999 and 2005 (see Annex Table 1).

In chart 2 a variant of the index shows the participation patterns in initial and continuing vocational training only for European countries which participated in the second and third continuing vocational training surveys (which were carried out in 1999 and 2005, respectively).

Chart 2: Participation in vocational training for European countries

An index of participation in vocational education and training (CVTS countries)

Source: CRELL computations based on Eurostat data (see Annex Table 2)



(i) PL: CVTS data for 1999 refers to Pomorskie region only

Country notes are available on the Eurostat website: http://epp.eurostat.ec.europa.eu/pls/portal/url/page/SHARED/PER_POPSOC

The index measures participation in vocational education and training. It is computed based on two indicators: IVTS and CVTE (see Annex Table 2 for details on each indicator). The two indicators are subsequently scaled using the distance to the best performer approach in which all countries with valid data for two years (1999, 2005) are considered (24 countries). The index score is calculated as the arithmetic average of the normalized indicators. This normalization approach is appropriate as there are no outliers in the dataset. No imputations are made for missing data; countries with missing data are excluded from the calculations.

The index scores shows that in 1999 participation in vocational training was already high in the Czech Republic, Slovenia, Luxembourg, Austria and Belgium. Some countries have progressed even further between 1999 and 2005, some notably faster. The Czech Republic increased by 13.8 points, Hungary went up from 16.7 to 28 points, Luxembourg and Slovenia's scores increased by 10 points. Spain, Portugal and Romania have also progressed during this time period (*see Annex Table 2*). Overall, the index decreased by 5 points between 1999 and 2005 at the EU level; to a certain extent the drop is confirmed as well by the provisional results of the third Continuing Vocational Training survey (CVTS 3). Participation in continuing vocational training measured by the number of participants in CVT courses as percentage of employees has decreased in 2005 compared to 1999 in nine countries for which data exists (Belgium, Denmark, Germany, Greece, the Netherlands, Finland, Sweden, United Kingdom and Norway). There are also different patterns of participation among the member states; an increased proportion of the employees participate in CVT courses in most of the new member states which are now catching up in participation with old member states. The higher score of Hungary in 2005 is due to increases in participation figures in both initial and continuing VET.

In chart 3 the vocational training index and the lifelong learning index are compared.¹⁰ The chart shows that United Kingdom has exceptionally high overall participation whereas in Slovenia and Austria the scores are lower but still above the European average for both indexes.¹¹ France and Belgium are also performing very well: they are above the EU average participation in lifelong learning and very close to the average performance in vocational training. Denmark, Netherlands, Sweden and Norway are also excellent European performers in participation in lifelong learning. Overall the picture shows sizeable differences in participation patterns between the member states, with some new member states performing significantly lower than other European countries (*see Annex Table 3*).

Most European countries have made progress in defining unified and overarching strategies; explicit lifelong learning strategies which set out national policy priorities and how different sectors relate to each other, were developed by the majority of countries (16 member states). It can hardly be a coincidence that the best performing countries were also those that developed a coherent lifelong learning strategy at the national level. Most of these incorporate a comprehensive vision of lifelong learning, covering all types and levels of education and training; some focus on formal education and training systems or on developing specific stages of the lifelong learning continuum. However, innovative learning partnerships and sustainable funding for high quality, efficient and equitable education and training still elude many countries; ensuring that reforms are effectively implemented is an important challenge to all.¹²

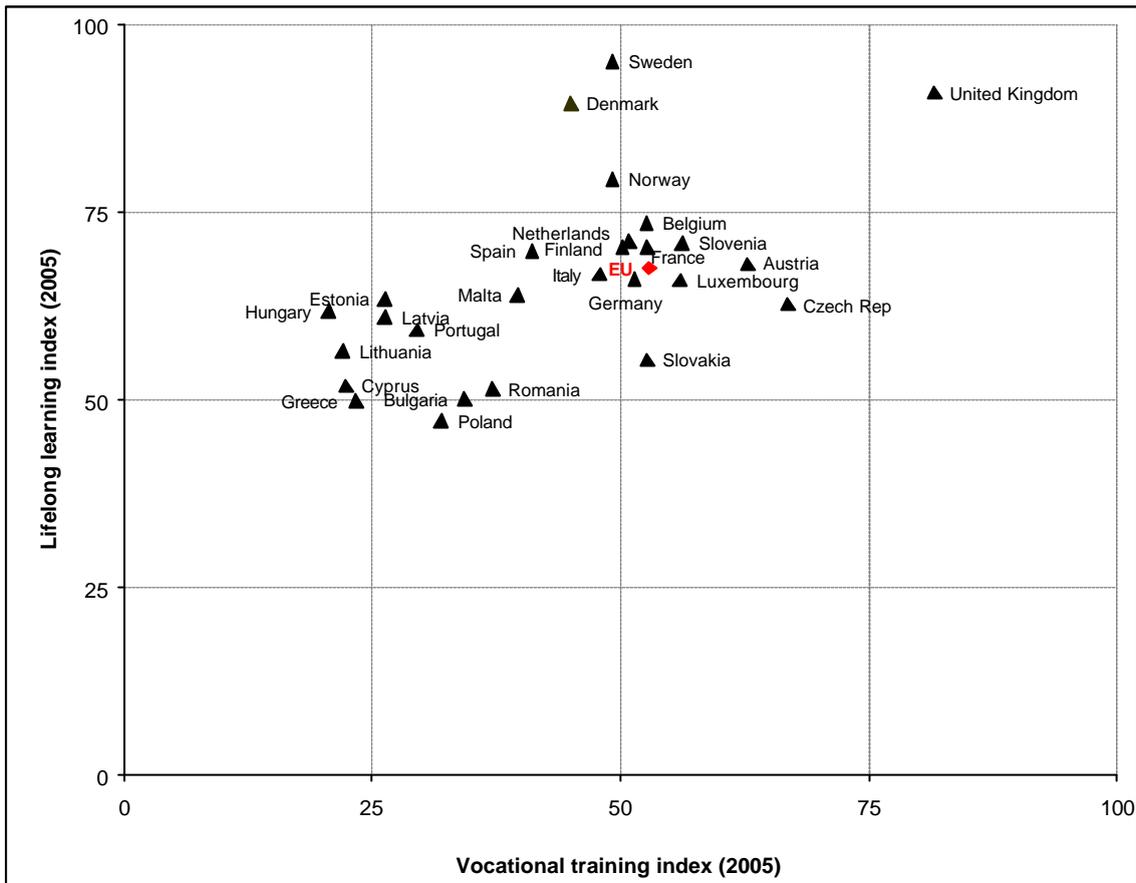
¹⁰ For more details see: *Participation in lifelong learning in Europe: What can be measured and compared?* (CRELL, 2008)

¹¹ A moderate correlation of 0.6 exists between the two indexes

¹² [Delivering lifelong learning for knowledge, creativity and innovation](#), Joint progress report of the Council and the Commission on the implementation of the 'Education and Training 2010' work programme, Brussels, January 2008

Chart 3: Participation in lifelong learning and in vocational training for European countries

Source: CRELL computations based on Eurostat data (see Annex Table 3)



Country notes are available on the Eurostat website: http://epp.eurostat.ec.europa.eu/pls/portal/url/page/SHARED/PER_POPOSOC

Whereas the United Kingdom shows very good performance in participation in lifelong learning as well as in vocational training, Sweden, Denmark and Norway are among the best performing European countries in lifelong learning but they show lower scores of the VET index. Other factors concur in explaining the difference across participation patterns among European countries. Some results based on data from the European Community Household Panel (ECHP) show that the country effects account for almost half of the explained variation in training participation. The cross-country variation remains large even controlling for other characteristics such as: educational attainment level, age classes, firm size classes, occupations and industries. Also, differences associated with country of residence remain, *ceteris paribus*, larger than differences associated with industry, occupation, education, age and firm size.¹³

¹³ Bassanini, A., Booth, A., Brunello, G., De Paola, M., Leuven, E., *Workplace training in Europe*, IZA Discussion paper no. 1640, Bonn, 2005

4. Investment in vocational education and training

An important issue for most countries is the allocation of resources for vocational education and training. Building on the Lisbon Council's call for increased and improved investment in human resources, making the best use of resources was one of the thirteen specific objectives of the Education and Training 2010 work programme '*expanding and improving investment in human resources*' was included in the renewed Lisbon strategy. As mentioned in the 2008 Joint Interim Report the level, of efficiency and sustainability of funding remain critical and most governments seem to recognise that the necessary reforms cannot be accomplished within current levels and patterns of investment in education and training.

In 2005 almost 90% of investment on educational institutions (all levels combined) at European level was covered from public sources. The public sector finance the educational sector by bearing directly the expenses of educational institutions, by supporting students and their families with scholarships and public loans, or by transferring public subsidies for educational activities to private companies or non-profit organisations. All these transactions are reported as public expenditure on education and training and included in the indicator on public investment on education as a percentage of Gross Domestic Product (GDP), which is often seen as the commitment which governments make to the provision of education in a country.

Educational expenditures on vocational programmes collected in the UOE data collection are only available for 14 European countries for financial year 2003. Data show wide variations between European countries in their levels of total public expenditure on secondary-level VET programmes as a percentage of GDP ranging from 0.3% to 1.1%. Finland had the highest relative spending at 1.1% of GDP, followed by the Czech Republic, Hungary, the Netherlands and Slovakia, all of which allocated 1% of their GDP to VET. The orientation of the programme provided to pupils and the number of pupils enrolled in the education system largely influences the allocation of resources to VET. Expenditure on educational institutions per pupil gives a better measure of unit costs in initial VET. With the exception of the Netherlands all other countries for which data is available spend, on average, more per pupil on vocational programmes than on general programmes, with sizeable differences in countries like Germany, Cyprus and Bulgaria where spending per vocational pupil is almost double expenditure per secondary pupil following a general programme.¹⁴

The differences between European countries are due to disparities in employee compensation (which are counted differently as part of total expenditure by educational institutions), to expenditure on

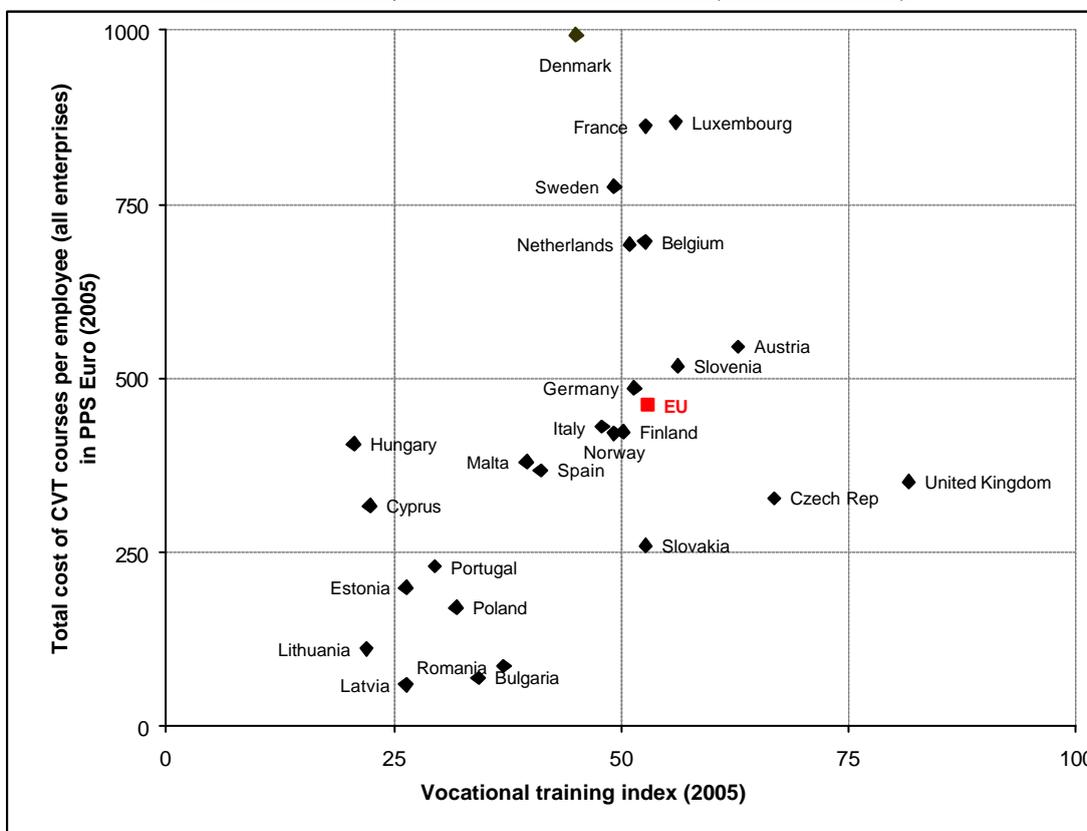
¹⁴ For a complete discussion of the data see European Commission, *Progress towards the Common Objectives in Education and Training. Indicators and Benchmarks*, Commission Staff Working Document, SEC(2007) 1284, Brussels, October 2007

teaching materials and facilities but also to private expenditure which can be sizeable in some countries. One particular issue related to this is to capture educational expenditures at the workplace. The companies' net training costs are sizeable lower than the gross expenditure with the trainees as these are also productive workers which mean that accounting for the economic benefits reduces the gross costs considerably.

In 2005 the training expenditures of European employers were reported between 60 Euro per employee in Latvia and 993 in Denmark (in Purchasing Power Standards); the average cost for CVTS countries had dropped from 633 PPS Euro in 1999 to 461 PPS Euro in 2005. Some countries have had a strong increase for example Slovenia with an increase from 167 to 517 Euro. Romania, Hungary, Lithuania and Poland also increased their investments substantially in the period. But how significant are these data in economic terms? As shown in chart 4 training costs are not negligible. In 2005, the average among the countries participating in CVTS 3 corresponded to 1.6% of total labour costs, varying from 0.6% in Greece, to 2.7% in Denmark (*see Annex Table 4*). In more than half of the participating countries the share of CVT courses in the total labour costs dropped between 1999 and 2005 whereas only one third of countries (a majority of new Member States) have seen increases in the cost of CVT courses as a proportion of total labour costs in 2005 compared to 1999; in Hungary the share increased from 1.2% to 2.6%.

Chart 4: Participation and cost of vocational training in European countries

Source: CRELL computations based on Eurostat data (see Annex Table 4)



Country notes are available on the Eurostat website: http://epp.eurostat.ec.europa.eu/pls/portal/url/page/SHARED/PER_POPSOC

In the standard theory of human capital, employers and employees share the cost and benefits of training when training is firm-specific and/or training is general but there are multiple skills and each firm employs a specific-combination of skills. This sharing mechanism ensures that both firm and worker have the incentive to maintain the relationship after training and thereby to get in the returns. However the employers appear to be the main actors in the training market with some 75 per cent of the training courses on average being directly paid by employers, and little evidence that employees indirectly pay the cost of training through lower wages (see Bassanini *et al.*, 2005).

Along the same line some studies investigating the cost-benefit ratio of apprenticeship training in companies have indicated that most apprentices offset the cost of their training during their apprenticeship period on the basis of the productive contribution of the work they perform. Maximum-likelihood selection models were used to estimate the net cost of training for firms without an apprenticeship programme. The results show that 'non-training firms' would incur significantly higher net cost during the apprenticeship period if they would switch to a training policy and, secondly, that this less favourable cost-benefit ratio is determined less by cost than by absence of benefit. For the apprenticeship system as such the results indicate that, as long as training regulations and the market situation permit a cost-effective training of apprentices, companies do not need specific labour market regulations or institutions to offer training posts.¹⁵

The information on investment in training is a prerequisite to assess efficiency issues in vocational education and training and to monitor progress towards increase investment in human resources. Most governments seem to recognise that the necessary reforms in education and training cannot be accomplished within the current levels and patterns of investment; some European countries have made progress in experimenting with new instruments and with incentives for private investment. The upward trend noted between 2000 and 2005 in some countries with low levels of investment in education could be seen as a promising sign of giving priority to investment on education and training.¹⁶

¹⁵ Wolter *et al.*, 'Why some firms train apprentices and many others do not?', German Economic Review, Volume 7, Issue No.3, 2006

¹⁶ For a complete discussion on investment issues see *Progress towards the Common Objectives in Education and Training. Indicators and Benchmarks*, European Commission Staff Working Document, Brussels, July 2008

5. The outputs and outcomes of vocational education and training

Direct (internationally comparable) outcome indicators (*i.e.* student achievements in basic subjects and competencies) are not available for upper secondary vocational education, with the exception of TIMSS and PISA data. The situation is similar for output indicators. Cohort data are missing and limited information is available on effectiveness and success rates in VET.¹⁷ There is a lack of comparable data on the volume of VET provision and the links to national qualification frameworks, to transition processes, *etc.* The exceptions are data related to “final year” in TIMSS and International Adult Literacy Survey (IALS) data where distinction has been made for population that has attained the secondary level (ISCED 3). In both surveys information could be made available on the educational background of participants. However only a part of these questions could be asked in a similar way in all participating countries and literacy and numeracy results from the two surveys can only be of a limited use in matching the literacy profiles with national or international educational attainment levels.

The outputs of VET

Attempts to raise the image and attractiveness of initial VET, by increasing the access to higher levels of education, have been made in all member states.¹⁸ In order to see the attainment and progression patterns one option is to look at the unduplicated number of graduates from upper secondary education by programme destination¹⁹. This indicator can give a picture on the educational output showing the proportion of the typical population of upper secondary school age that follows and successfully completes upper secondary programmes. Although not all of the graduates are in this age band, this calculation gives an indication of the number of students completing upper secondary education programmes for the first time, as a percentage of the age group normally completing this level. In some member states for which comparable data is available, the ratio of upper secondary graduates to the population at the typical age of graduation exceeds 70% and in Germany, Ireland, Finland and Denmark the rates equal or exceed 90%. Graduation rates can be used as a proxy for educational outputs as they are an indicator of the current production rate of higher-level knowledge for each country's education system. Countries with high graduation rates are most likely to be developing or maintaining a highly skilled labour force.

¹⁷ Descy *et al.*, ‘*Internationally comparable statistics on education, training and skills: state-of-the-art and prospects*’, European Journal ‘Vocational Training’, Cedefop, Thessaloniki

¹⁸ European Commission, Directorate General for Education and Culture (2005). ‘*Achieving of Lisbon goals. The contribution of VET*’

¹⁹ This requires detailed information about the typical ages at the starting and the end of the programme, the theoretical duration of the programme and assuming full-time participation and no repetition

The LFS indicator on early school leaving (18 to 24-years-old with at most a lower secondary education qualification and not in further education and training) can give an overall picture of school dropout but the breakdowns by programme orientation (general vs. vocational) are not possible to be reported. National figures suggest that dropout rates are higher in vocational programmes than in general ones. However, school dropout is often difficult to measure as so many actions can be regarded as “drop-out”.²⁰ High dropout rates can indicate that the education system is not meeting the needs of its clients. Students may not find that the educational programmes offered meet their expectations or their labour market needs or they may find that programmes take longer than the number of years which they can justify being outside the labour market.

Learning outcomes of VET students

The large scale internationally comparable assessments programmes often concentrate on general competences (e.g. reading, information processing, numeracy and problem solving) whereas many employers argue that in vocational education the assessment domains should be sector- or work-specific skills, which are highly contextualized. Evidence shows that in many countries pupils enrolled in vocational programmes perform significantly less well in reading literacy than pupils enrolled in general programmes. In countries for which PISA²¹ results exist, variation in performance can be observed between 15-year-olds; students enrolled in vocational programmes performing significantly less well in reading literacy than students enrolled in general programmes. The results from PISA 2003 show that 15-year-old pupils in pre-vocational and vocational programmes perform significantly less well in mathematics than pupils enrolled in general programmes in 12 out of the 16 OECD countries for which data are available. On average, across OECD countries 15-year-old pupils enrolled in general programmes have a performance advantage of 47 points and this difference exceeds 60 points in Belgium, Greece, Hungary and the Netherlands. After adjusting for socio-economic factors, the performance advantage still remains at 29 points, which is in the order of magnitude of one school year.²²

One should be aware however that internationally comparable large scale assessments programmes often concentrate on general competences (e.g. reading, information processing, numeracy and problem solving) whereas many employers argue that, in vocational education, the assessment domains should be sector- or work-specific skills, which are highly contextualised. In order to measure learning outcomes and to be able to measure if progress has been accomplished in development of skills there is an increasing need to conduct surveys which focus as well on the assessment of vocational skills and competences.

²⁰ Leaving a programme before the end; taking time off during a programme; transferring to another programme (whether “better” or “worse”); transferring to another institution (whether to the same programme or not); finishing the programme but failing the final examinations; succeeding in the final examinations but not entering the next level of education; etc.

²¹ Programme for International Student Assessment-PISA (OECD)

²² OECD, *Education at a Glance* 2007, based on PISA 2003 results

Labour market outcomes of VET graduates

Avoiding early labour market difficulties is particularly important for youth as a rich literature shows that long unemployment experiences at labour force entry may have persistent effects on employment likelihood and wages later in life. In some European countries education and work largely occur consecutively, while in others they are concurrent. Work-study programmes, which are relatively common in Scandinavian countries but also in the Netherlands, Germany and Austria, offer coherent vocational training routes to recognised occupational qualifications, whereas in other European countries formal education and work are rarely associated. The dual systems²³ have proven quite successful in giving young people a good start in the labour market. Indeed, Denmark and Austria are among the European countries with the lowest unemployment rates for youth, well below the EU average for the same indicator.

Recent empirical findings provide further support for the idea that apprenticeships have a positive effect on early career unemployment outcomes. Evidence shows that effects of apprenticeship training on long-term employment outcomes and on post-apprenticeship wages are more mixed. Van der Velden *et al.* (2001) show that European countries with apprenticeship systems enjoy better youth employment patterns, particularly in terms of larger employment share in skilled occupations and in high-wage sectors, than those with little or no apprenticeship. Along similar lines, Gangl (2003) carries out a study of labour market outcomes of different types of school/work-based qualifications – including apprenticeships – for 12 European countries, and finds that apprenticeships perform rather favourably both compared to school-based education at the same level of training and across different qualification levels. Gangl also reports that, after controlling for institutional and structural factors, apprenticeships produce a significant reduction in early career unemployment rates. Ryan (2001) and Steedman (2005) put forward the argument that part of this effect may come through a better matching of training to labour market demand that results from apprenticeship training being contingent on the offer from employers.

Recent OECD estimates also suggest that youths tend to pass through multiple spells of unemployment before settling into work. In Germany and Austria, where the apprenticeship system is most developed, more than half of those leaving school find a job without experiencing any unemployment. In addition, Austria, Denmark and Germany are among the countries with the lowest share of youth experiencing repeated unemployment spells. In Spain, on the other hand, multiple spells are common among youths, more than half of whom experienced two or more over the

²³ Systems where class-based and work-based training are provided in parallel are known as “dual” systems. In a “dual” system framework – typical of Austria, Denmark, Germany and Switzerland and more recently Norway – youths spend some time in educational institutions and the remainder at the workplace. Apprenticeships are then part of the formal educational structure, and are usually entered into after completion of compulsory education. They involve an employment relationship *plus* formal schooling – normally one and a half to two days per week – over a period of three or sometimes four years. At the end of the programme, apprentices graduate through a final examination in which they have to prove their theoretical and practical grasp of the occupation concerned.

reference period. The total time spent in unemployment over the reference period is also important. In southern European countries youths spent, on average, about a quarter of their time (20 months or more) in unemployment, while in Austria, Denmark and Ireland they were unemployed for only about five out of the 84 months.²⁴

Other outcomes of vocational training

The private returns of CVT measured as the effects on wages are roughly similar to the benefits of an additional year spent in formal education which are estimated at 5-15%.²⁵ The results are debated in the literature, especially due to the duration of CVT which is shorter than the duration of formal education. Also, estimating the private returns in terms of wages is subject to various methodological and technical issues (for instance the participants in CVT are likely to have different characteristics which can be assessed differently (e.g. higher levels of schooling but also higher abilities). Along this line, some empirical studies show that the wage effects are generally lower for workers with low educational attainment than for their more educated counterparts (Bassanini *et al.*, 2005).

While some research (Oosterbeek and Webbink, 2007) shows no beneficial effect of an extra year of basic vocational education on the long-term wages suggesting equal gains from an extra year in vocational school as from an extra year of work experience other evidences shows that the magnitude of the economic returns from CVT is sizeable compared to the benefits of formal education.²⁶ Cooke (Cooke, L.P, 2003) analysed initial wage levels based on school quality and training track for two cohorts of non-university young adults. He found that vocational certification did predict higher wages for youth from different school tracks; for cohorts in which general education was more prevalent, formal vocational certification was an important predictor of higher initial wages for both high and low quality school tracks. By comparing the earnings five, ten and 13 years after labour market entry, he concluded that the returns to specific vocational training manifest in higher initial wages with apprenticeship predicting higher changes in wages within a time period. This pattern of higher initial returns holds for subsequent vocational certification can suggest the support for lifelong learning. Less evidence exists regarding to the social returns of CVT. Some results show that CVT may induce positive externalities in the sense of individual learning opportunities (for instance one employee may benefit from another's knowledge acquired in the context of training). However, these positive externalities generated by participation in CVT are likely to be primarily within a company and difficult to be accounted for in the society as such. Moreover these externalities concern to a lesser extent the CVT for the employed but may be more significant when the employed persons become unemployed.

²⁴ OECD Social, Employment and Migration Working Papers (2006) 'Starting Well or Losing their Way? The position of Youth in the Labour Market in OECD countries' <http://www.oecd.org/dataoecd/0/30/37805131.pdf>

²⁵ European Commission, *Employment in Europe*, Brussels, 2007

²⁶ Oosterbeek, H., Webbink, D., 'Wage effects of an extra year of basic vocational education', *Economics of Education Review*, Volume 26, Issue 4, pp. 408-419

6. Conclusions

In the past years changing labour market and economic conditions have resulted in a clear demand for more and better quality of VET in most European countries. A vocational training index shows that three countries (United Kingdom, Czech Republic and Austria) have exceptionally high overall participation in vocational training; for another group of three countries (Slovenia, Luxembourg and France) participation is above the European average.

Adult participation in continuing vocational training has made slow progress; the number of participants in CVT courses as percentage of employees has decreased in 2005 compared to 1999 in nine countries for which data exists. There are different patterns of participation among the member states; an increased proportion of the employees participate in CVT courses in most of the new member states which are now catching up in participation with old member states. Country effects account for almost half of the explained variation in training participation; cross-country variation in participation in training remains large even controlling for other characteristics such as: educational attainment level, age classes, firm size classes, industries.

OECD evidence shows that pupils enrolled in vocational programmes perform significantly less well in reading literacy than pupils enrolled in general programmes; in countries for which PISA results exists, variation in performance can be observed between 15-year-olds. Even after adjusting for socio-economic factors, the performance advantage still remains. However the internationally comparable large scale assessments programmes often concentrate on general competences whereas many employers argue that, in vocational education, the assessment domains should be sector- or work-specific skills, which are highly contextualised. In order to measure if progress has been accomplished in development of adult skills there is an increasing need to conduct surveys which focus as well on the assessment of vocational skills and competences.

Some findings provide further support for the idea that apprenticeships have a positive effect on early career unemployment outcomes. Evidence shows positive effects of apprenticeship training on long-term employment outcomes and on post-apprenticeship wages; European countries with apprenticeship systems enjoy better youth employment patterns (particularly in terms of larger employment share in skilled occupations and in high-wage sectors) than those without this system.

Evidences on the private returns to vocational training are more mixed. Some studies show that the magnitude of the economic returns from CVT is sizeable compared to the benefits of formal education whereas other indicates that the private returns of CVT measured as the effects on wages are roughly similar to the benefits of an additional year spent in formal education (which are estimated at 5-15%).

ANNEX

Policy overview: Copenhagen-Maastricht-Helsinki

Some concrete outcomes of the European cooperation in vocational education and training

Common European tools	Policy objective - contribution to Education and Training 2010	Stage of development (2008)
The European Qualifications Framework (EQF)	EQF contributes to the transparency, comparability and portability of citizens' qualifications. It is a common European reference framework which links countries' qualifications systems together, acting as a translation device to make qualifications more readable and understandable across different countries and systems in Europe.	The Recommendation on the European Qualifications Framework for lifelong learning was signed on 23 April 2008 by the Presidents of the European Parliament and of the Council. The recommendation invites Member States to relate their qualifications systems to EQF by 2010, and to refer all new qualification certificates, diplomas and Europass documents by 2012 to the appropriate EQF level.
A European Credit system for VET (ECVET)	ECVET aims at facilitating European mobility in VET and access to lifelong learning for young and adult learners. It supports the learners while building individual learning pathways leading to qualifications. It provides a common methodological framework based on units of learning outcomes so as to facilitate transfer of credits between qualifications and VET systems.	The European Commission has finalised its proposal for a recommendation of the European Parliament and of the Council on the establishment of the European Credit system for Vocational Education and Training (ECVET) on 09 April 2008. An agreement on the ECVET recommendation is expected by the end of 2008.
Common Quality Assurance Framework for VET	To promote cooperation on quality assurance in VET between Member States by providing a guarantee for quality assurance in VET. Member States will be encouraged to exchange models and methods in this field.	The European Commission adopted on 9 April 2008 a proposal for the recommendation of the European Parliament and of the Council concerning the establishment of a European Quality Assurance Reference Framework for Vocational Education and Training (EQARF-VET).
A single Community framework for the transparency of qualifications and competences (Europass)	To improve transparency of qualifications and competences which will subsequently facilitate mobility throughout Europe for lifelong learning purposes, thereby contributing to developing quality education and training and facilitating mobility for occupational purposes, both between countries and across sectors.	Adopted by a Decision of the European Parliament and of the Council in December 2004. Europass is implemented in 32 countries. The Europass website, developed by Cedefop, recorded 10 millions visits. 2.5 million CVs were completed online. A first external evaluation, conducted in 2007, concluded that the Europass initiative is achieving its objectives as a mobility tool for citizens and helps them to make their competences and qualifications easier to understand learning contexts and the labour market. The Commission prepared a communication to the Council and the European Parliament.
Common European principles for identification and validation of non-formal and informal learning	Common European principles are necessary to encourage and guide development of high-quality, trustworthy approaches and systems for identification and validation of non-formal and informal learning.	The Education Council has endorsed a set of common European principles for identification and validation of non-formal and informal learning. A European Inventory on validation of non-formal and informal learning has been set up to support implementation of the common principles and to promote mutual learning between European countries. The Cedefop Virtual Community on non-formal learning provides a platform for dissemination of and further exchanges on the common principles and their further development.
Lifelong guidance	Guidance throughout life contributes to achieving the European Union goals of economic development, occupational and geographical mobility and human capital and workforce development. Provision of guidance within the education and training system, and especially in schools or at school level, has an essential role to play in ensuring that individuals' educational and career decisions are firmly based and in assisting them to develop effective self-	The Resolution adopted by the Council in 2004 invites Member States to examine national guidance provision in education, training and employment. A template for action to support Member States in this process was devised. Additionally, a <i>Career guidance handbook for policymakers</i> was published by the OECD and the Commission in December 2004. It provides common principles and other tools to improve services at national, local and company levels. The European lifelong guidance policy network ELGPN was established in 2007 to assist the Member States and the

	management of their learning and career paths.	Commission in moving European cooperation on lifelong guidance forward in both education and the employment sectors. The purpose is to promote cooperation at Member States level on lifelong guidance and to propose appropriate structures and support mechanisms in implementing the priorities identified in the Resolution (2004).
VET statistics	Adequate and consistent data and indicators are the key to understanding what is happening in VET, to strengthening mutual learning, to supporting research and to laying the foundations for evidence-based training policy.	Cooperation is underway between different Commission DGs (EAC, JRC/CRELL and Eurostat) and Community agencies (Cedefop and Eurydice) with the aim of developing a framework for reporting on VET.

Sources: European Commission (Directorate General Education and Culture), Cedefop (www.cedefop.europa.eu)

References

- Badescu, M., Saisana, M., *Participation in lifelong learning in Europe: What can be measured and compared?*, JRC/CRELL Scientific and Technical Reports, EUR 23511 EN, Luxembourg, Office for Official Publications of the European Communities, 2008
- Badescu, M., *Measuring the outputs and outcomes of vocational training-towards a coherent framework for indicators*, EUR 22305 EN, Luxembourg, Office for Official Publications of the European Communities, 2006
- Badescu, M., *Mapping the competences in vocational education and training for statistical purposes*, CRELL Research Paper, Ispra, Italy, 2006
- Badescu, M., Nardo, M., *The use of indicators and benchmarks in monitoring the progress in education and training at the European level*, Paper presented at the VIII International Meeting on Quantitative Methods for Applied Sciences, University of Siena, Italy, 11-13 September 2006
- Bassanini, A., Booth, A., Brunello, G., De Paola, M., Leuven, E., *Workplace training in Europe*, IZA Discussion paper no. 1640, Bonn, 2005
- Cooke, L., *A comparison of initial and early life course earnings of the German secondary education and training system*, Economics of Education Review, Volume 22, Issue 1, 2003
- Descy, P., Nestler, K., Tessaring, M., *Internationally comparable statistics on education, training and skills: state-of-the-art and prospects*, European Journal 'Vocational Training', Cedefop, Thessaloniki, 2007
- European Commission, *Delivering lifelong learning for knowledge, creativity and innovation*, Joint progress report of the Council and the Commission on the implementation of the 'Education and Training 2010' work programme, Brussels, January 2008
- European Commission, *Progress towards the Common Objectives in Education and Training. Indicators and Benchmarks*, Commission Staff Working Document, SEC(2007) 1284, Brussels, October 2007
- European Commission, *It is always good time to learn*, Action Plan on Adult learning, Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, COM(2007) 558 final, Brussels, September 2007
- European Commission, *A coherent framework of indicators and benchmarks for monitoring progress towards the Lisbon objectives in education and training*, Communication from the Commission to the Council, COM(2007) 61 final, Brussels, April 2007
- European Commission, *Employment in Europe*, Brussels, 2007
- European Commission, *Achieving the Lisbon goal: the contribution of VET*, November 2004
- European Commission, *Council Resolution on the Promotion of Enhanced European Cooperation in Vocational Education and Training*, Brussels, October 2002
- Helsinki Communiqué on *Enhanced European Cooperation in Vocational Education and Training*, December 2006
- OECD, *Education at a Glance*, Paris, 2007
- OECD *Starting Well or Losing their Way? The position of Youth in the Labour Market in OECD countries*, Social, Employment and Migration Working Papers, Paris, 2006
- Oosterbeek, H., Webbink, D., *Wage effects of an extra year of basic vocational education*, Economics of Education Review, Volume 26, Issue 4, 2007
- Wolter et al., *'Why some firms train apprentices and many others do not?'*, German Economic Review, Volume 7, Issue 3, 2006

ANNEX – DATA USED IN THIS PUBLICATION

Table 1: Participation in vocational education and training in European countries (2005)

A composite index on participation in vocational education and training (d)

2005	EU	BE	BG	CZ	DK	DE	EE	IE	GR	ES	FR	IT	CY	LV	LT	LU	HU
IVTS	60.5	69.6 i	54.6	79.5	47.9	60.3	31	:	36 i	42.6 i	56.4	61.5	13.5	35.5	25.3	63.4	24.1
IVTE	5.3 p	0.9 p	1.8 p	0.7 p	3.2 p	5.4 p	0.1 p	:	0.4 p	2.9 p	2.2 p	3.5 p	0.2 p	1.8 p	1.8 p	1.5 p	1 p
CVTE	33 p	40 p	15 p	59 p	35 p	30 p	24 p	:	14 p	33 p	46 p	29 p	30 p	15 p	15 p	49 p	16 p
VET index	53.6	53.4	34.6	67.9	45.7	52	26.7	:	23.7	41.8	53.6	48.5	23	26.6	22.3	57	21

2005	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	MK	TR	IS	LI	NO
IVTS	42.4	68.2	78.5	45	31	65.2	67.4	74.2	63.9 i	53.6	72.2 i	:	:	:	:	:	60.8
IVTE	2.4 p	2.1 p	6.6 p	0.9 p	0.7 p	0.3 p	0.4 p	0.5 p	1.2 p	0.9 p	18.4 p	:	:	:	:	:	1.6 p
CVTE	32 p	34 p	33 p	21 p	28 p	17 p	50 p	38 p	39 p	46 p	33 p	:	:	:	:	:	29 p
VET index	40.2	51.6	63.5	32.4	30.1	37.5	57.2	53.5	51	50.1	82.2	:	:	:	:	:	44.8

Source: CRELL calculations

Data source: Eurostat (UOE data collection and Continuing Vocational Training Survey); (:) Missing or not available; (p) Provisional data
Country notes are available on the Eurostat website: http://epp.eurostat.ec.europa.eu/pls/portal/url/page/SHARED/PER_POPSOC

(d) The index measures participation in vocational education and training. It is computed based on three indicators: students enrolled in vocational programmes at the upper secondary (ISCED 3) level of school education (IVTS), participants in initial vocational training in enterprises (IVTE) and participants in continuing vocational training in enterprises (CVTE). The three indicators are subsequently scaled using the distance to the best performer approach in which all countries with valid data are considered (27 countries). The index score is computed as the arithmetic average of the three normalized indicators. This normalization approach is appropriate as there are no outliers in the dataset. No imputations are made; countries with missing data are excluded from the calculations.

Table 2: Participation in vocational education and training in European countries (CVTS countries)

A composite index on participation in vocational education and training (d)

1999	EU	BE	BG	CZ	DK	DE	EE	IE	GR	ES	FR	IT	CY	LV	LT	LU	HU
IVTS	59.3	65.7 i	56.4	79.7	53.3	64.6	33.6	:	25.8	31.2	57.2	63.5	14	36.7	32.5	63.7	11
CVTE	40	41	13	42	53	32	19	41	15	25	46	26	:	12	10	36	12
VET index	70	74.8	46	84.4	76.9	66.8	36.7	:	28.5	40.1	73.6	61.1	:	32.9	28.6	69.5	16.7

1999	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	MK	TR	IS	LI	NO
IVTS	44.3	67.3	70.6	66.1	25	69.2	74.8	79.6	53.2	47.3	66.7 i	:	66.3	48.6	31.5	:	53.6
CVTE	:	41	31	16 i	17	8	32	:	50	61	49	:	:	:	:	:	48
VET index	55.6	75.8	69.7	54.6	29.6	50	73.2	:	74.4	79.7	82	:	:	:	:	:	73

2005	EU	BE	BG	CZ	DK	DE	EE	IE	GR	ES	FR	IT	CY	LV	LT	LU	HU
IVTS	60.5	69.6 i	54.6	79.5	47.9	60.3	31	:	36	42.6	56.4	61.5	13.5	35.5	25.3	63.4	24.1
CVTE	33 p	40 p	15 p	59 p	35 p	30 p	24 p	:	14 p	33 p	46 p	29 p	30 p	15 p	15 p	49 p	16 p
VET index	65	76.5	46.5	98.2	58.7	62.4	39.1	:	34.1	53.8	73.1	62.4	33.1	34.6	28.2	79.9	28.2

2005	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	MK	TR	IS	LI	NO
IVTS	42.4	68.2	78.5	45	31	65.2	67.4	74.2	63.9	53.6	72.2	:	:	:	:	:	60.8
CVTE	32 p	34 p	33 p	21 p	28 p	17 p	50 p	38 p	39 p	46 p	33 p	:	:	:	:	:	29 p
VET index	52.8	70.7	76.3	45.4	42.4	54.8	83.3	77.7	72.1	71.3	72.3	:	:	:	:	:	61.9

Source: CRELL calculations

Data source: Eurostat (UOE data collection and Continuing Vocational Training Survey); (:) Missing or not available; (p) Provisional data
Country notes are available on the Eurostat website: http://epp.eurostat.ec.europa.eu/pls/portal/url/page/SHARED/PER_POPSOC

(d) The index measures participation in vocational education and training for countries participating in the Continuing Vocational Training Survey . It is computed based on two indicators: students enrolled in vocational programmes at the upper secondary (ISCED 3) level of school education (IVTS) and participants in continuing vocational training in enterprises (CVTE). The two indicators are subsequently scaled using the distance to the best performer approach in which all countries with valid data for the two years (1999, 2005) are considered (24 countries). The index score is calculated as the arithmetic average of the normalized indicators. This normalization approach is appropriate as there are no outliers in the dataset. No imputations are made for missing data; countries with missing data are excluded from the calculations.

Table 3: Participation in lifelong learning in European countries (2005)
A composite index on participation in lifelong learning for 4-to-64 year olds (d)

2005	EU	BE	BG	CZ	DK	DE	EE	IE	GR	ES	FR	IT	CY	LV	LT	LU	HU
ECE	85.6	100 i	73.2	91.4	93.5	84.6	84.2	45.4 i	57.8	99.3	100	100	61.4	72.2	56.8	95.4	90.7
EDU	60.1	65.6	50.2	54.8	63.6	62	60.6	62.9	58.9	54.1	61.3	56.7	52.3	59.7	65	52	57
LLL	9.7	8.3	1.3	5.6	27.4	7.7	5.9	7.4	1.9	10.5	7.1	5.8	5.9	7.9	6	8.5	3.9
LLL index	67.6	73.6	50.2	62.8	89.6	66.1	63.5	53.2	49.9	70	70.3	66.8	51.9	61.1	56.6	66.0	61.9
2005	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	MK	TR	IS	LI	NO
ECE	94.4	73.4	82.5	38.1	84	76.2	75.9	74	46.7	88.9	91.8	44.7	15.4	5	95.3	50.6	88.9
EDU	55.9	63.1	56.9	60.7	55.9	50.1	62.3	53.5	66.4	66	67.5	51.2	48.2	44.5	68.3	:	65.8
LLL	5.3	15.9	12.9	4.9	4.1	1.6	15.3	4.6	22.5	33.4 e	27.5	2.1	:	1.9	25.7	:	17.8
LLL index	64.0	71.1	68.1	47.2	59.4	51.4	71	55.4	70.4	95.2	91	42	29.2	25.3	90.7	:	79.5

Source: CRELL calculations

Data source: Eurostat (UOE data collection and Labour Force Survey) ; (i) Missing or not available.

Country notes are available on the Eurostat website: http://epp.eurostat.ec.europa.eu/pls/portal/url/page/SHARED/PER_POPSOC

(d) The lifelong learning index is a proxy measure of participation in education and lifelong learning for the population aged 4 to 64. One indicator is used for each stages of lifelong learning: the Early Childhood Education (ECE) measures the participation of 4-years old in education at ISCED levels 0 and 1, EDU shows the participation in primary, secondary and tertiary education of population aged 5 to 29 and LLL is the EU benchmark on participation in lifelong learning (i.e. the persons aged 25 to 64 who stated that they received education or training in the four weeks preceding the Labour Force Survey as percentage of population aged 25-64). The three indicators are subsequently scaled using the distance to the best performer approach, in which all countries with valid data are considered (32 countries). Missing values are estimated using multivariate analysis.

The index score is calculated as the arithmetic average of the normalized indicators. This normalization approach is appropriate as there are no outliers in the dataset. Each those 3 components are assigned equal weight in the overall index in accordance with the principle of considering each stage of lifelong learning participation as being of equal importance. There are no correlation issues to be taken into account during the weighting, since path analysis results confirm that by assigning 1/3 weight to each indicator, the total impact of a single indicator to the overall index score is roughly 31%.

Table 4: Participation and cost of vocational education and training in European countries (2005)

2005	EU	BE	BG	CZ	DK	DE	EE	IE	GR	ES	FR	IT	CY	LV	LT	LU	HU
CVTE cost PPS €	461 p	696 p	69 p	327 p	993 p	486 p	199 p	:	137 p	367 p	862 p	430 p	317 p	60 p	111 p	868 p	405 p
CVTE cost (%)	1.6 p	1.6 p	1.1 p	1.9 p	2.7 p	1.3 p	1.6 p	:	0.6 p	1.2 p	2.3 p	1.3 p	1.3 p	0.8 p	1.2 p	2 p	2.6 p
VET index	53.6	53.4	34.6	67.9	45.7	52	26.7	:	23.7	41.8	53.6	48.5	23	26.6	22.3	57	21
2005	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	MK	TR	IS	LI	NO
CVTE cost PPS €	380 p	692 p	545 p	171 p	229 p	86 p	517 p	259 p	423 p	776 p	351 p	:	:	:	:	:	421 p
CVTE cost (%)	1.8 p	2 p	1.4 p	1.3 p	1.1 p	1.1 p	2 p	1.8 p	1.5 p	2.1 p	1.3 p	:	:	:	:	:	1.3 p
VET index	40.2	51.6	63.5	32.4	30.1	37.5	57.2	53.5	51	50.1	82.2	:	:	:	:	:	44.8

Source: CRELL calculations

Data source: Eurostat (UOE data collection and Continuing Vocational Training Survey) ; (p) Provisional data

Country notes are available on the Eurostat website: http://epp.eurostat.ec.europa.eu/pls/portal/url/page/SHARED/PER_POPSOC

(d) Training costs are included in the total labour costs (i.e. all the costs born by the employers with hiring of their employees) as part of the indirect costs. The labour costs are divided into 'direct costs' (e.g. direct payments and/or payments in kind, etc.) and 'indirect costs' (e.g. vocational training costs, social security contributions, allowance, etc.). Data is estimated by adding the corrected direct costs and labour costs of participants and expressed in PPS Euro and as a percentage of the labour costs.

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Abstract

Statistics and indicators already form an essential part of existing initiatives in the field of vocational education and training with a view to monitoring progress both in achieving identified targets and in implementing policy objectives. Indicators do not tell the full story but they help to identify differences, similarities and trends and to provide a starting point for further analysis in order to understand better performance and progress.

The availability and quality of statistics in the area of VET have improved the last couple of years. However, as a result of data gathering practises, identifying the most appropriate indicators for monitoring the developments in this field remains a difficult exercise. This publication is based on data provided by Eurostat from joint data collection on education (UOE), Continuing Vocational Training Survey (CVTS) and EU Labour Force Survey (LFS).

With reference to the explicit objective of the Copenhagen process of improving the scope, comparability and reliability of statistics on vocational education and training, this publication presents composite indicators on participation in VET which are constructed based on Eurostat data. The indicators can be further used to monitoring the developments in vocational education and training across European countries in a comparable manner.

The first section describes the European political context in the field of vocational education and training while the second section looks at the main monitoring issues. Indicators on participation in vocational education and training (both initial and continuing) are presented and analysed in the third section where an index of vocational training is constructed and analysed. The links between vocational training and participation in lifelong learning across European countries are investigated. Financing issues are discussed in the fourth section whereas some outcomes for VET are presented in the fifth section. An overview of the concrete outcomes of the European cooperation in vocational education and training is presented in the annex.

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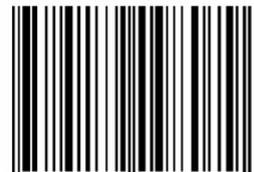
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